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09/955,309	09/19/2001	Takayoshi Ozaki	57454-237	8168

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EXAMINER

MONBLEAU, DAVIENNE N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,309

Applicant(s)

OZAKI ET AL.

Examiner

Davienne Monbleau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.



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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/19/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the first radial magnetic bearing" in line 19. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the second radial magnetic bearing" in line 20. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "the third radial magnetic bearing" in line 23. There is insufficient antecedent basis for this limitation in the claim.

Claim 2 recites the limitation "said the other radial electromagnet" in lines 7-8. There is insufficient antecedent basis for this limitation in the claim.

Claim 5 recites the limitation "adjacent two said magnetic poles" in lines 4. There is insufficient antecedent basis for this limitation in the claim. If this is referring to two of the eight magnetic poles mentioned within the same claim, the language is confusing. Also, in line 3, "electromagnet" should be changed to – electromagnets – .

Regarding Claim 11, the phrase "said magnetic bearings" should be changed to – said magnetic bearing – .

Regarding Claim 12, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding Claim 13, it is unclear what "of at least 16" and "of at least 18" is referring to. ²

Claim 14 recites the limitation "each of said radial electromagnets" in lines 14-15. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "said radial magnetic bearing" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "said radial magnetic bearing" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites the limitation "said radial magnetic bearing" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 11 and 12, to the extent taught and understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Sekiguchi et al. (U.S. Patent No. 6,366,039). Regarding Claim 11, Sekiguchi et al. disclose in Figure 2 a fan for an excimer laser apparatus comprising a rotary shaft (4), a fan (3), a motor (30), a magnetic bearing (11), an austenitic stainless steel portion (17), a magnetic body (11c), and an opposing electromagnet (11b).

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Regarding Claim 12, the method recited in this claim regarding annealing is not a positive structural limitation to the apparatus claim. Therefore, this claim is rejected for the same reasons as Claim 11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 and 6-10, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (U.S. Patent No. 6,366,039) in view of Sekiguchi et al. (U.S. Patent No. 6,464,472) and Nara et al. (U.S. Patent No. 6,337,872). Regarding Claim 1, Sekiguchi et al. '039 teach in Figure 2 a fan for an excimer laser apparatus comprising a rotary shaft (4), a fan (3), a motor (30), and a control type magnetic bearing including three radial magnetic bearings (8, 9, and 10), each with an electromagnet and a position detection sensor, and an axial magnetic bearing (11) with an electromagnet (11c and

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11b). Sekiguchi et al. '039 do not teach protective bearings. Sekiguchi et al. '472 teach in Figure 1 protective bearings (11 and 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to use protective bearings in Sekiguchi et al. '039, as taught by Sekiguchi et al. '742, to support the shaft in emergencies. (See Sekiguchi et al. '742 column 4 lines 40-48). Sekiguchi et al. '039 further teaches in Figure 2 a permanent magnet (15a) on one end of the shaft, but to not teach that it is part of said axial magnetic bearing. Sekiguchi et al. '742 also teaches in Figure 1 that said axial magnetic bearing may be on both ends of the shaft (6 and 7). Nara et al. teach in Figure 6 a gas laser fan comprising permanent magnets (13 and 14) at the opposite end of the shaft. It would have been obvious to one of ordinary skill in the art that permanent magnets may be included within the axial magnetic bearing of Sekiguchi et al. '039, as taught by Nara et al., because the permanent magnets at the end of the shaft constitute a magnetic torque coupling for transmitting a drive force of the motor to the fan. Sekiguchi et al. '039 also indicate that the permanent magnet (15a) increases the flux density of the magnetic flux of a magnetic circuit.

Regarding Claim 6, Sekiguchi et al. '039 teach in Figure 2 a fan for an excimer laser apparatus comprising a rotary shaft (4), a fan (3), a motor (30), and a control type magnetic bearing including three radial magnetic bearings (8, 9, and 10), each with an electromagnet and a position detection sensor, and an axial magnetic bearing (11) with an electromagnet (11c and 11b). Sekiguchi et al. '039 do not teach protective bearings. Sekiguchi et al. '742 teach in Figure 1 protective bearings (11 and 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to use protective bearings in Sekiguchi et al. '039, as taught by Sekiguchi et al. '742, to support the shaft in emergencies. (See Sekiguchi et al. '742 column 4

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lines 40-48). Sekiguchi et al. '039 further teaches in Figure 2 a permanent magnet (15a) on one end of the shaft, but to not teach that it is part of said axial magnetic bearing. Sekiguchi et al. '742 also teaches in Figure 1 that said axial magnetic bearing may be on both ends of the shaft (6 and 7). Nara et al. teach in Figure 6 a gas laser fan comprising permanent magnets (13 and 14) at the opposite end of the shaft. It would have been obvious to one of ordinary skill in the art that permanent magnets may be included within the axial magnetic bearing of Sekiguchi et al. '039, as taught by Nara et al., because the permanent magnets at the end of the shaft constitute a magnetic torque coupling for transmitting a drive force of the motor to the fan. Sekiguchi et al. '039 also indicate that the permanent magnet (15a) increases the flux density of the magnetic flux of a magnetic circuit. Furthermore, Nara et al. teach in Figures 1-4 various configurations with two or three radial magnetic bearings.

Regarding Claim 10, Sekiguchi et al. '039 teach in Figure 2 a fan for an excimer laser apparatus comprising a rotary shaft (4), a fan (3), a motor (30), and a control type magnetic bearing including three radial magnetic bearings (8, 9, and 10), each with an electromagnet and a position detection sensor, and an axial magnetic bearing (11) with an electromagnet (11c and 11b). Sekiguchi et al. '039 do not teach protective bearings. Sekiguchi et al. '742 teach in Figure 1 protective bearings (11 and 12). It would have been obvious to one of ordinary skill in the art at the time of the invention to use protective bearings in Sekiguchi et al. '039, as taught by Sekiguchi et al. '742, to support the shaft. (See Sekiguchi et al. '742 column 4 lines 40-48). Sekiguchi et al. '039 further teaches in Figure 2 a permanent magnet (15a) on one end of the shaft, but to not teach that it is part of said axial magnetic bearing. Sekiguchi et al. '742 also teaches in Figure 1 that said axial magnetic bearing may be on both ends of the shaft (6 and 7).

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Nara et al. teach in Figure 6 a gas laser fan comprising permanent magnets (13 and 14) at the opposite end of the shaft. It would have been obvious to one of ordinary skill in the art that permanent magnets may be included within the axial magnetic bearing of Sekiguchi et al. '039, as taught by Nara et al., because the permanent magnets at the end of the shaft constitute a magnetic torque coupling for transmitting a drive force of the motor to the fan. Sekiguchi et al. '039 also indicate that the permanent magnet (15a) increases the flux density of the magnetic flux of a magnetic circuit. Additionally, Sekiguchi et al. '039 does not teach only two radial magnetic bearings or that said motor is close to the axial electromagnet. However, Nara et al. teaches in Figures 1-4 various configurations of the motor and magnetic bearings. Therefore, one of ordinary skill in the art would be able to determine the optimum placement of the motor and respective magnetic bearings (radial and axial).

Regarding Claims 2 and 7, Sekiguchi et al. '794 teach in Figure 1 a first and second protective bearings (20 and 21). Determining the optimum placement between the magnetic bearings and motor involve routine skill in the art.

Regarding Claims 3 and 8, adding additional protective bearings to provide the same function is repetition of parts and one of ordinary skill in the art would be able to determine the optimum number and placement of said protective bearings.

Regarding Claims 4 and 9, Sekiguchi et al. '039 teaches in Figure 2 a soft magnetic material (13) on a portion of said shaft (4) and that the diameter of the shaft is smaller than the inner diameter of said radial magnetic bearings.

Claim 5, to the extent taught and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (U.S. Patent No. 6,366,039) in view of Sekiguchi et al. (U.S.

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Patent No. 6,464,472) and Nara et al. (U.S. Patent No. 6,337,872), as applied to Claim 1 above, and further in view of Sekiguchi et al. (U.S. Patent No. 6,519,273). Sekiguchi et al. '039 do not teach that said electromagnets have eight magnetic poles. Sekiguchi et al. '273 teach in Figure 3 an electromagnet with eight magnetic poles. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the electromagnet in Sekiguchi et al. '039, as taught by Sekiguchi '273, as it serves the function of controlling the rotation of the shaft.

Claim 13, to the extent taught and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (U.S. Patent No. 6,366,039) in view of Webb (U.S. Patent No. 6,208,675). Sekiguchi et al. do not teach the material of the shaft. Webb teaches in column 2 lines 37-40 various materials for the shaft, such nickel, monel, and tin. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a material in Sekiguchi et al., as taught by Webb, because they are resistant to erosion when exposed to the gases. Choosing a particular material based on its inherent properties involves routine skill in the art.

Claims 14-19, to the extent taught and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiguchi et al. (U.S. Patent No. 6,366,039) in view of Sekiguchi et al. (U.S. Patent No. 6,404,794). Regarding Claim 14, Sekiguchi et al. '039 teach in Figure 2 a fan for an excimer laser apparatus comprising a rotary shaft (4), a fan (3), a motor (30), and a control type magnetic bearing including a radial electromagnet (8B) formed by sealing a coil with a metal (18) having corrosive resistance against said laser gas. (See also column 5 lines 6-20). Sekiguchi et al. '039 do not teach protective bearings. Sekiguchi et al. '794 teach in Figure 1 protective bearings (20 and 21). It would have been obvious to one of ordinary skill in the art at

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the time of the invention to use protective bearings in Sekiguchi et al. '039, as taught by Sekiguchi et al. '794, to support the shaft. (See Sekiguchi et al. '794 column 6 lines 30-34).

Regarding Claim 15, Sekiguchi et al. '039 teach in column 5 lines 7-20 a pair of disk shaped magnetic bodies (8b and 8d), coils, and a cylindrical member (18) to seal the magnetic bodies from the laser gas.

Regarding Claims 16 and 17, these are well-known equivalent variations on the structure of a radial magnetic bearing and provide for the same function.

Regarding Claim 18, position sensors for excimer/gas fans and their structure are commonly known and used in the art.

Regarding Claim 19, Sekiguchi et al. '794 teach in Figure 5 first and second housings, one on each side of said shaft, wherein each housing has a radial electromagnet (51d and 52d) and a position sensor (51c and 52c).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 6,532,246; US 6,535,539; US 6,577,664; US 6,539,043; US 6,026,103; and US 6,104,735.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Davienne Monbleau whose telephone number is 703-306-5803. The examiner can normally be reached on Mon-Fri 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on 703-308-3098. The fax phone numbers for the

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organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Darienne Monbleau

DNM
June 23, 2003

Paul Ip

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